TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
203mm01.wo		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2004/012344	01.11.2004	04.11.2003

International Patent Classification (IPC) or national classification and IPC

. F16L59/065 F16L59/00

Applicant

DEGUSSA AG

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 7 sheets, as follows:

      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/012344

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-29 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1-34 received by this Authority on 18.04.2006 with telefax

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets 1/5-5/5 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/012344

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-34	YES
	Claims		NO
Inventive step (IS)	Claims	1-34	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-34	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US-A-4 887 433 (LOCATELLI ET AL) 19 December 1989 (1989-12-19)

D2: DE 196 41 647 C1 (LINDE AG, 65189 WIESBADEN, DE) 26 February 1998 (1998-02-26), mentioned in the application.

1 D1, which is considered the closest prior art, discloses (cf. column 1, lines 38 to 50 and column 3, lines 38 to 56) a conduit component for an energy network having at least a first conduit for an at least partially liquid cryogenic energy carrier **from which the subject matter of claim 1 differs in that** at least one **second conduit** for a heat transfer medium runs parallel to the first conduit and at the ends of the **second conduit**, heat exchangers which thermally contact the first conduit are provided for heating and/or evaporating or for cooling and/or condensing the heat transfer medium when the cryogenic medium is removed from or introduced into the first conduit, or at one end of the **second conduit**, heat

exchangers which thermally contact the first conduit are provided for cooling and/or condensing the heat transfer medium when the cryogenic medium is removed from the first conduit and at the other end of the **second conduit**, elements are provided for obtaining expansion work by heating and/or evaporating the heat transfer medium.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

2 The problem addressed by the present invention can therefore be considered that of improving the energy balance of a conduction system for cryogenic energy carriers.

3 The solution to this problem proposed in claim 1 of the present application involves an inventive step (PCT Article 33(3)) for the following reasons:

- the second conduit known from D1, which runs parallel to the conduit for the cryogenic energy carrier, does not transport a heat transfer medium, but merely thermally shields the conduit for the cryogenic energy carrier;

- a second conduit for a heat transfer medium parallel to the first conduit is neither known from nor suggested by the remaining solutions known from the prior art (see, e.g., D2) for improving the energy balance of a conduit system

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

for cryogenic energy carriers;

- the solution proposed in claim 1 of using the evaporation heat from the cryogenic energy carrier to cool and liquefy a heat transfer medium that is located in a parallel conduit and stores energy via phase transition so as to improve the energy balance is neither known from nor suggested by the prior art.

4 The same argument applies accordingly to independent claim 25.

5 Claims 2 to 24 and 26 to 34 are dependent on claims 1 and 25 and therefore likewise meet the PCT novelty and inventive step requirements.

6 Claims 1 to 34 likewise meet the PCT requirements for industrial applicability (PCT Article 33(4)).

Box No. VIII **Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1 The description (see page 26, lines 15 to 19) and figure 5 give the impression that the "micro heat exchanger" indicated in claim 2 has to satisfy certain criteria with respect to its positioning relative to the outer jacket of the conduit component and is characterised by special technical features for which no alternatives are envisaged.

Consequently, contrary to PCT Article 6, claim 2 is not supported by the description.

2 Since the above-mentioned essential features of the "micro heat exchanger" are not included in claim 2, the term "micro heat exchanger" is unclear and the use of a "micro heat exchanger" that is known per se for a conduit component according to D1 could therefore not be deemed inventive.

3 The wording "third conduit" used in claims 27 and 30-32 does not make it clear whether the "third conduit" can be used optionally for the transport of the heat exchange medium or the energy carrier or whether there are two different "third conduits".